

REMARKS

Claims 1-2, 4-5 and 7-14 currently appear in this application. The Office Action of December 18, 2003, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicants respectfully request favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

The Invention

The present invention provides a method and apparatus for producing high-purity standard particles. Among the features of the present invention, the following are important:

- a. A particle heating means is positioned between a particle classification chamber and a particle collecting chamber.
- b. The particle heating means is adapted to heat the high-purity standard particles classified at the particle classification chamber by infrared radiation at a downstream position from the particle classification chamber.
- c. A high-purity standard particle of a comparatively large diameter which has a non-spherical structure and which is composed of a cohesive mass of particles of

diameter smaller than the cohesive mass is reshaped into spherical high-purity standard particles.

d. This improves the crystallization of the high-purity standard particles.

The features described above are shown in Figure 6 of the drawings and described in the specification as filed at page 18, lines 4-13. Referring to Figure 6, a non-spherical cohesive mass, shown in black, is converted to a spherical particle, shown as a circle, by being irradiated with infrared rays and heated to a temperature in excess of 1000 degrees C. The particle heating means of the present invention effects this heating.

Art Rejections

Claims 1, 2, 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. in view of Sajoto et al.

This rejection is respectfully traversed. The publication date of Seto et al. is October 4, 2001. Submitted herewith is the declaration of the present inventors demonstrating that they conceived and reduced to practice the invention of the present application prior to October 4, 2001. As evidence of this conception and reduction to practice, a certified copy and translation of Japanese Patent Application

No. 2001-37736, which was filed in Japan, a WTO country, February 14, 2001.

This function is neither explained nor suggested in Seto et al. Sajoto et al. merely disclose an improved heater with an infrared radiation heating means. However, there is nothing to lead one skilled in the art to believe that Seto et al. conceived that a non-spherical cohesive mass of a comparatively large diameter can be reshaped into spherical particles by irradiating the mass under infrared rays and heating the mass to a temperature of over 1000 degrees C.

In the field of high-purity standard particles, it has been recognized that when the high-purity standard particles are heated, the crystallization of the particles improved. However, the phenomenon of reshaping the non-spherical cohesive mass as described and claimed herein was not recognized. Therefore, the particle heating means of the present invention is able to reshape the non-spherical cohesive mass into spherical particles.

There is nothing in Seto et al. or Sajoto et al. that would lead one skilled in the art to use infrared radiation to heat the particles so that a cohesive mass of relatively large diameter can be reshaped into spherical particles. There is no assertion in Seto et al. that a

cohesive mass is reshaped, or what degree of heating is required to control the Sajoto et al. heater.

Claim 8 requires that the particle inflow pipe means be equidistantly separated into four divisions separated by 90 degrees. The effect obtained is that particles charged into the particle classification chamber are supplied equally in circumference to the particle classification chamber in a manner such that the flow of particles is divided into four divisions. By supplying the particles equally around the circumference, classification of particles is efficiently performed.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. in view of Sajoto et al. and further in view of Hohla et al.

This rejection is respectfully traversed. As Seto et al. have been removed as a reference, it is believed that this rejection is now moot.

Rejections under 35 U.S.C. 112

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is respectfully traversed. Claim 8 has been amended to make clear that the divisions are separated into four sections by 90 degree angles.

Election/Restriction

Claims 9-14 are said to be directed to an invention that is independent or distinct from the invention originally claimed.

It is believed that claims 9-14 define a method which is used in the apparatus claimed herein.

It is noted that any references not explicitly discussed but made of record are considered relevant to the prosecution of eh instant application.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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